

JC13 Rec'd PCT/PTO 20 MAR 2002

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Ikunori AZUSE et al.**

Serial No.: **Not Yet Assigned**
(§ 371 of international application No. PCT/JP01/06573)

Filed: **March 20, 2002**

For: **SPIN FINISH FOR ELASTIC FIBERS**

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

March 20, 2002

Sir:

Prior to the calculation of the filing fees of the above application, please amend the application as follows:

IN THE ABSTRACT OF THE DISCLOSURE:

Please substitute the original Abstract of the Disclosure for the one enclosed herewith.

IN THE CLAIMS:

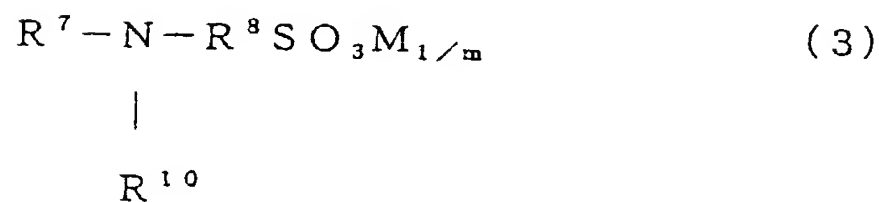
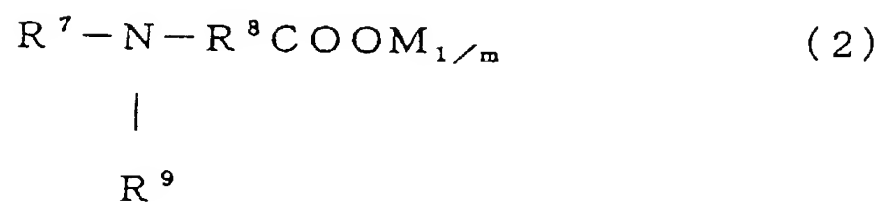
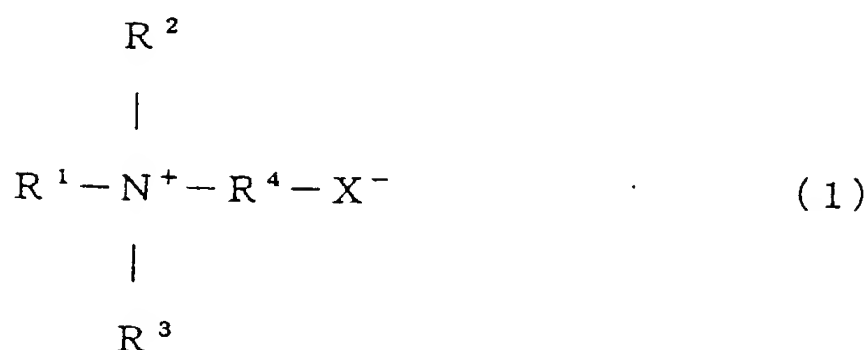
Please cancel claim 14 without prejudice or disclaimer:

Please amend the following claims as follows:

1. (Amended) A method of treating an elastic fiber
which comprises providing an elastic fiber with a spin finish for elastic fibers in an amount
of 0.1 to 12% by weight of the elastic fiber,

said spin finish comprising an amphoteric surfactant (A1) and/or a cationic surfactant (A2) as well as a base oil (B) and having a surface tension thereof at 25°C of 14 to 35 mN/m and a volume resistivity thereof at 20°C of 1×10^7 to $1 \times 10^{13} \Omega \text{ cm}$.

2. (Amended) The method of treating an elastic fiber according to Claim 1, wherein the amphoteric surfactant (A1) comprises not less than one surfactant represented by the following general formula (1), (2) or (3):



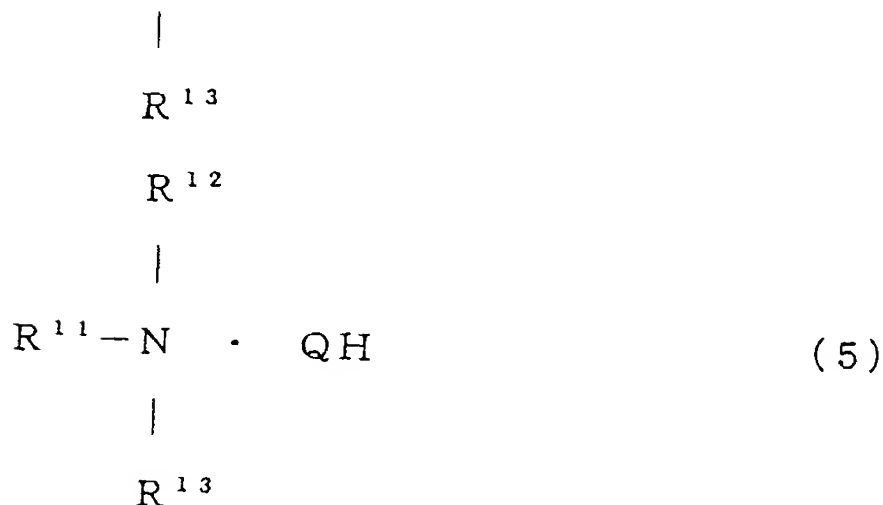
in the formulas, R^1 , R^2 and R^3 each independently is a group selected from among an alkyl, alkenyl and hydroxyalkyl group containing 1 to 30 carbon atoms and groups represented by the formula

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R^5 -T- R^6 -, R^5 represents the residue of a C_{1-30} fatty acid after removal of the COOH group therefrom, R^6 represents an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms and T represents -COO- or -CONH-; R^4 is an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms; X^- is COO^- or SO_3^- ; R^7 is an alkyl, alkenyl or hydroxyalkyl group containing 1 to 30 carbon atoms; R^8 is an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms; R^9 is a hydrogen atom or a group represented by the formula $-R^8COOM_{1/m}$; R^{10} is a hydrogen atom or an alkyl or alkenyl group containing 1 to 30 carbon atoms; M is a hydrogen atom or an alkali metal, alkaline earth metal or amine cation and, when M is a plurality of species, they may be the same or different; m represents the valence of M and is 1 or 2.

3. (Amended) The method of treating an elastic fiber according to Claim 1, wherein the cationic surfactant (A2) comprises one or two or more surfactants represented by the following general formula (4) or (5):



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in the formula, R^{11} , R^{12} and R^{13} each independently represents a group selected from among an alkyl, alkenyl, hydroxyalkyl and polyoxyalkylene group containing 1 to 30 carbon atoms and groups represented by the formula R^5-T-R^6 -, R^5 represents the residue of a C_{1-30} fatty acid after removal of the COOH group therefrom, R^6 represents an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms and T represents $-COO-$ or $-CONH-$; R^{14} is an alkyl, alkenyl, hydroxyalkyl or polyoxyalkylene group containing 1 to 30 carbon atoms; any two of R^{12} , R^{13} and R^{14} , together with N, may combinedly form a heterocyclic ring; Q^- represents an inorganic or organic acid anion and QH represents an inorganic or organic acid.

4. (Amended) A method of treating an elastic fiber

which comprises providing an elastic fiber with a spin finish for elastic fibers in an amount of 0.1 to 12% by weight of the elastic fiber,

said spin finish comprising an ionic surfactant (A) and a base oil (B) and having a surface tension (S) thereof at 25°C of 14 to 22.5 mN/m and a volume resistivity (ρ) thereof at 20°C of 1×10^7 to $1 \times 10^{13} \Omega \text{ cm}$,

ρ and S satisfying the following relation [1]:

$$\rho \leq 1 \times 10^{(-2.4S + 61)} \quad [1].$$

5. (Amended) The method of treating an elastic fiber according to Claim 4,

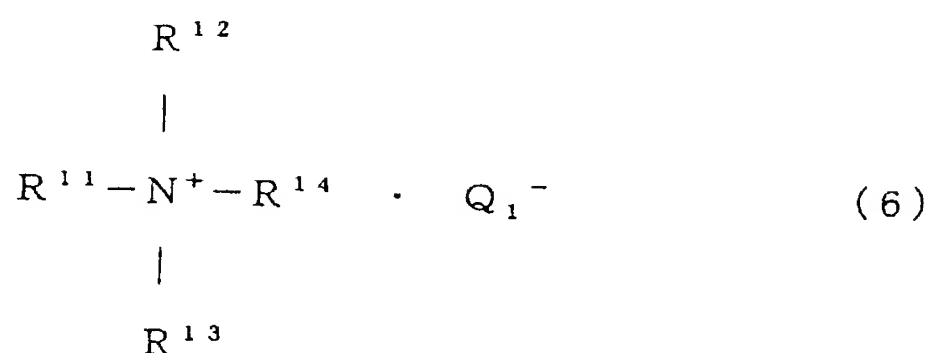
wherein (A) is one or two or more ionic surfactants selected from the group consisting of amphoteric surfactants (A1), cationic surfactants (A2) and anionic surfactants (A3),

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10. (Amended) The method of treating an elastic fiber according to Claim 4, wherein the content of (A) in the spin finish (nonvolatile matter) is 0.01 to 30% by weight.

11. (Amended) A method of treating an elastic fiber which comprises providing an elastic fiber with a spin finish for elastic fibers in an amount of 0.1 to 12% by weight of the elastic fiber, said spin finish comprising a quaternary ammonium salt (A2-11) represented by the following general formula (6), a base oil (B) and a higher fatty acid (C₅₋₃₀) metal salt powder (C):



in the formula, R¹¹, R¹² and R¹³ each independently is a group selected from among an alkyl, alkenyl, hydroxyalkyl and polyoxyalkylene group containing 1 to 30 carbon atoms and groups represented by the formula R⁵-T-R⁶-, R⁵ represents the residue of a C₁₋₃₀ fatty acid after removal of the COOH group therefrom, R⁶ represents an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms and T represents -COO- or -CONH-; R¹⁴ is an alkyl, alkenyl, hydroxyalkyl or polyoxyalkylene group containing 1 to 30 carbon atoms; any two of R¹², R¹³ and R¹⁴, together with N, may

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lubricants (B4), carboxylic acid lubricants (B5), carboxylic acid ester lubricants (B6) and polyether lubricants (B7).

17. The method of treating an elastic fiber according to Claim 1
which comprises one or two or more anti-tackiness agents selected from the group consisting of fine mineral solid particles, higher fatty acid (C_{5-30}) metal salt powders, silicones which are solid at ordinary temperature and waxes which are solid at ordinary temperature.

18. The method of treating an elastic fiber according to Claim 1,
wherein the content of (A1) and/or (A2) in the spin finish (nonvolatile matter) is 0.01 to 30% by weight.

19. An elastic fiber
which is obtained by the treatment method according to Claim 4.

20. An elastic fiber
which is obtained by the treatment method according to Claim 11.

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REMARKS

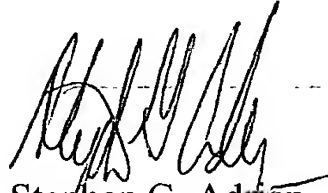
The above amendment is believed to place the claims in proper condition for examination.
Early and favorable action is awaited.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

In the event there are any additional fees required, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP

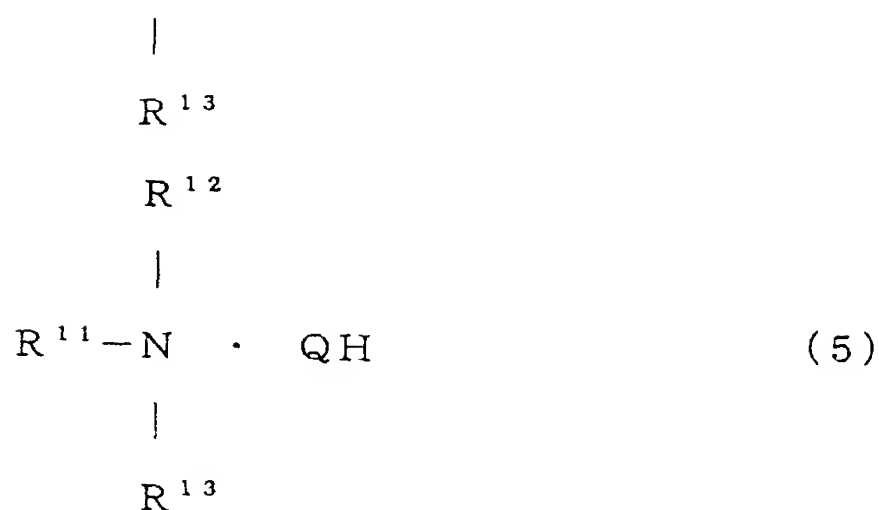

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in the formulas, R^1 , R^2 and R^3 each independently is a group selected from among an alkyl, alkenyl and hydroxyalkyl group containing 1 to 30 carbon atoms and groups represented by the formula R^5-T-R^6 , R^5 represents the residue of a C_{1-30} fatty acid after removal of the $COOH$ group therefrom, R^6 represents an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms and T represents $-COO-$ or $-CONH-$; R^4 is an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms; X^- is COO^- or SO_3^- ; R^7 is an alkyl, alkenyl or hydroxyalkyl group containing 1 to 30 carbon atoms; R^8 is an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms; R^9 is a hydrogen atom or a group represented by the formula $-R^8COOM_{1/m}$; R^{10} is a hydrogen atom or an alkyl or alkenyl group containing 1 to 30 carbon atoms; M is a hydrogen atom or an alkali metal, alkaline earth metal or amine cation and, when M is a plurality of species, they may be the same or different; m represents the valence of M and is 1 or 2.

3. (Amended) The [spin finish for] method of treating an elastic [fibers] fiber according to Claim 1 [or 2],

wherein the cationic surfactant (A2) comprises one or two or more surfactants represented by the following general formula (4) or (5):



in the formula, R^{11} , R^{12} and R^{13} each independently represents a group selected from among an alkyl, alkenyl, hydroxyalkyl and polyoxyalkylene group containing 1 to 30 carbon atoms and groups represented by the formula R^5-T-R^6 , R^5 represents the residue of a C_{1-30} fatty acid after removal of the COOH group therefrom, R^6 represents an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms and T represents $-\text{COO}-$ or $-\text{CONH}-$; R^{14} is an alkyl, alkenyl, hydroxyalkyl or polyoxyalkylene group containing 1 to 30 carbon atoms; any two of R^{12} , R^{13} and R^{14} , together with N, may combinedly form a heterocyclic ring; Q^- represents an inorganic or organic acid anion and QH represents an inorganic or organic acid.

4. (Amended) A [spin finish for] method of treating an elastic [fibers] fiber which comprises providing an elastic fiber with a spin finish for elastic fibers in an amount of 0.1 to 12% by weight of the elastic fiber,

said spin finish comprising an ionic surfactant (A) and a base oil (B) and [has] having a surface tension (S) thereof at 25°C of 14 to 22.5 mN/m and a volume resistivity (ρ) thereof at 20°C of 1×10^7 to $1 \times 10^{13} \Omega \text{ cm}$,

ρ and S satisfying the following relation [1]:

$$\rho \leq 1 \times 10^{(-2.4S + 61)} \quad [1].$$

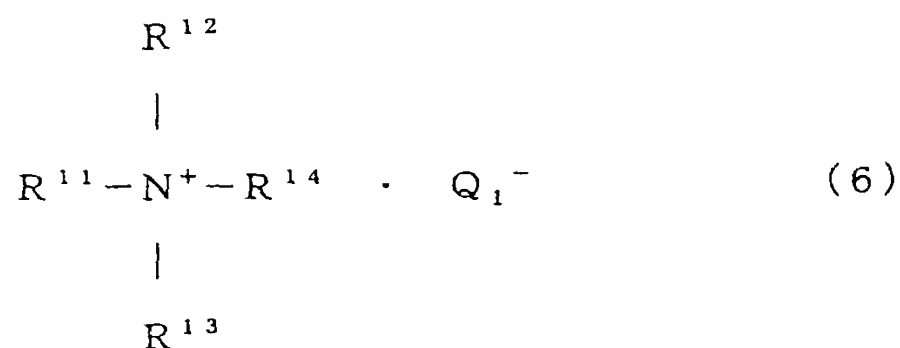
5. (Amended) The [spin finish for] method of treating an elastic [fibers] fiber according to Claim 4,

wherein (A) is one or two or more ionic surfactants selected from the group consisting of amphoteric surfactants (A1), cationic surfactants (A2) and anionic surfactants (A3),

said (A1), (A2) and (A3) containing neither perfluoro(cyclo)alkyl group nor perfluoroalkylene group.

6. (Amended) The [spin finish for] method of treating an elastic [fibers] fiber according to [any one of Claims 1 to 5] Claim 4,

said spin finish comprising a quaternary ammonium salt (A2-11) represented by the following general formula (6), a base oil (B) and a higher fatty acid (C₅₋₃₀) metal salt powder (C):



in the formula, R¹¹, R¹² and R¹³ each independently is a group selected from among an alkyl, alkenyl, hydroxyalkyl and polyoxyalkylene group containing 1 to 30 carbon atoms and groups represented by the formula R⁵-T-R⁶-, R⁵ represents the residue of a C₁₋₃₀ fatty acid after removal of the COOH group therefrom, R⁶ represents an alkylene or hydroxyalkylene group containing 1 to 4 carbon atoms and T represents -COO- or -CONH-; R¹⁴ is an alkyl, alkenyl, hydroxyalkyl or polyoxyalkylene group containing 1 to 30 carbon atoms; any two of R¹², R¹³ and R¹⁴, together with N, may combinedly form a heterocyclic ring; and Q₁⁻ is an organic acid anion derived from an organic acid-modified silicone.

12. (Amended) The [spin finish for] method of treating an elastic [fibers] fiber according to Claim 11,

which comprises not less than one additives selected from among antistatic agents (D), softening agents (E) and anti-tackiness agents (F) other than (C).

13. (Amended) The [spin finish for] method of treating an elastic [fibers] fiber according to Claim 11 [or 12],

wherein the content of (A2-11) in the spin finish (nonvolatile matter) is 0.01 to 10% by weight and the content of (C) is 0.01 to 12% by weight and the content of (B) is not less than 70% by weight.

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15. (Amended) An elastic fiber
which is [obtainable] obtained by the treatment method according to Claim [14] 1.

ABSTRACT

The present invention provides a spin finish for elastic fibers which comprises an amphoteric surfactant and/or a cationic surfactant as well as a base oil and has a surface tension thereof at 25 °C of 14 to 35 mN/m and a volume resistivity thereof at 20 °C of 1×10^7 to $1 \times 10^{13} \Omega \text{ cm}$;

a spin finish for elastic fibers which comprises an ionic surfactant and a base oil and has a surface tension (S) thereof at 25 °C of 14 to 22.5 mN/m and a volume resistivity (ρ) thereof at 20 °C of 1×10^7 to $1 \times 10^{13} \Omega \text{ cm}$, ρ and S satisfying the following relation [1];

$$\rho \leq 1 \times 10^{(-2.4S + 61)} \quad [1]$$

a spin finish for elastic fibers which comprises a quaternary ammonium salt of the specific composition, a base oil and a higher fatty acid (C_{5-30}) metal salt powder;

a method of treating an elastic fiber which comprises providing an elastic fiber with any of the above spin finish for elastic fibers in an amount of 0.1 to 12% by weight of said fiber;

and an elastic fiber which is obtained by the above treatment method.